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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/659,190	09/10/2003	Masayuki Takashima	600630-8US (562653)	5605

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PHILADELPHIA, PA 19103

EXAMINER	
WEBB, GREGORY E	
ART UNIT	PAPER NUMBER
1751	

DATE MAILED: 07/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Interview Summary	Application No.	Applicant(s)	
	10/659,190	TAKASHIMA, MASAYUKI	
	Examiner	Art Unit	
	Gregory E. Webb	1751	

All participants (applicant, applicant's representative, PTO personnel):

(1) *Gregory E. Webb*. (3)_____.

(2) *Aaron R. Ettelman*. (4)_____.

Date of Interview: *29 June 2006*.

Type: a)☒ Telephonic b)☐ Video Conference
c)☐ Personal [copy given to: 1)☐ applicant 2)☐ applicant's representative]

Exhibit shown or demonstration conducted: d)☐ Yes e)☒ No.
If Yes, brief description: _____.

Claim(s) discussed: *6 and 8-10*.

Identification of prior art discussed: *Sakai*.

Agreement with respect to the claims f)☒ was reached. g)☐ was not reached. h)☐ N/A.

Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments: *See Continuation Sheet*.

(A fuller description, if necessary, and a copy of the amendments which the examiner agreed would render the claims allowable, if available, must be attached. Also, where no copy of the amendments that would render the claims allowable is available, a summary thereof must be attached.)

THE FORMAL WRITTEN REPLY TO THE LAST OFFICE ACTION MUST INCLUDE THE SUBSTANCE OF THE INTERVIEW. (See MPEP Section 713.04). If a reply to the last Office action has already been filed, APPLICANT IS GIVEN A NON-EXTENDABLE PERIOD OF THE LONGER OF ONE MONTH OR THIRTY DAYS FROM THIS INTERVIEW DATE, OR THE MAILING DATE OF THIS INTERVIEW SUMMARY FORM, WHICHEVER IS LATER, TO FILE A STATEMENT OF THE SUBSTANCE OF THE INTERVIEW. See Summary of Record of Interview requirements on reverse side or on attached sheet.

Examiner Note: You must sign this form unless it is an Attachment to a signed Office action.

Examiner's signature, if required

Summary of Record of Interview Requirements

Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record
A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews
Paragraph (b)
In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

37 CFR §1.2 Business to be transacted in writing.
All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiners Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No., placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:
- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

It is desirable that the examiner orally remind the applicant of his or her obligation to record the substance of the interview of each case. It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview.

A complete and proper recordation of the substance of any interview should include at least the following applicable items:
1) A brief description of the nature of any exhibit shown or any demonstration conducted,
2) an identification of the claims discussed,
3) an identification of the specific prior art discussed,
4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
5) a brief identification of the general thrust of the principal arguments presented to the examiner,
   (The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
6) a general indication of any other pertinent matters discussed, and
7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete and accurate, the examiner will give the applicant an extendable one month time period to correct the record.

Examiner to Check for Accuracy

If the claims are allowable for other reasons of record, the examiner should send a letter setting forth the examiner's version of the statement attributed to him or her. If the record is complete and accurate, the examiner should place the indication, "Interview Record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.

Continuation of Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments: The applicant requested the status of the claims with respect to the Sakai reference. Although the rejection was not withdrawn, the applicant was not clear on the status of the claims with respect to Sakai. The examiner informed the applicant that the rejection was maintained and reiterated comments presented in the final rejection. The examiner has included with this summary the previous rejection to clarify the examiners position As stated on page 8 of the non-final, Sakai teaches the use of an alkaline compound and mannitols in a method of producing a semiconductor device..

DETAILED ACTION

Response to Arguments

Applicant's arguments filed 10/11/2005 have been fully considered and found persuasive. As such, previous rejections are withdrawn.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 6, 8-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Leon et al (US 6,030,932).

Concerning the basic compound, Leon teaches the following:

> 5. The composition of claims 5 wherein said quaternary ammonium hydroxide compound is selected from the group consisting of: tetamethylammonium hydroxide, tetaethylammonium hydroxide, trimethyl hydroxyethylammonium hydroxide, methyl tri (hydroxyethyl) ammonium hydroxide, and tetra(hydroxyethyl)ammonium hydroxide.(see claim 5)

Concerning the sugar alcohol, Leon teaches the following:

> Japanese Patent Application No. 7-028254, assigned to Kanto Kagaku, discloses a non-corrosive resist removal liquid comprising a sugar alcohol, an alcohol amine, water, and a quaternary ammonium hydroxide (see col. 2, lines 31-34; further noting that this reference teaches the required components of claim 6)

Concerning the chemical mechanical polish, Leon teaches the following:

> This invention relates to a cleaning composition and method for use in microelectronics manufacturing, and more particularly to a non-corrosive cleaning composition and method for removing photoresist, plasma etch and chemical-mechanical polishing (CMP) residues on substrates.(see col. 1, lines 10-15)

Concerning the optional alcohol solvent, Leon teaches the following:

> 6. The composition of claim 3 wherein said amine is selected from the group consisting of: monoethanolamine, diethanolamine, triethanolamine, diethylene glycolamine, and N-hydroxyethylpiperazine.(see claim 6)

Concerning the saccharides, sugar alcohols and the glucose, Leon teaches the following:

U.S. Pat. No. 5,174,816 to Aoyama et al. discloses a composition for removing chlorine remaining on the surface of an aluminum line pattern substrate after dry etching, which composition comprises an aqueous solution containing 0.01 to 15% by weight of a quaternary ammonium hydroxide, such as trimethyl (2-hydroxyethyl) ammonium hydroxide, and 0.1 to 20% by weight of sugar or sugar alcohol, such as xylitol, mannose, glucose and the like.(see cols. 2-3)

Claims 6, 8-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Seijo (US6773873).

Concerning the basic compound, tetramethylammonium hydroxide and the optional alcohol solvent, Seijo teaches the following:

Organic acids useful in the buffering system of the instant invention include but are not limited to: formic acid, trifluoroacetic acid, propionic acid, butyric acid, valeric acid, heptanoic acid, lactic acid, oxalic acid, malic acid, malonic acid, succinic acid, fumaric acid, adiptic acid, benzoic acid, phtalic acid and citric acid. Conjugate bases useful in the buffering system of the present invention include but are not limited to: a salt of the organic acid, ammonia, tetramethylammonium hydroxide, tetraalkylammonium hydroxide, 2-(methylamino)ethanol, monoisopropanolamine, diglycolamine, N,N-dimethyl-2-(2-aminoethoxy)ethanol, 1-(2-aminoethyl)piperidine,

1-(2-hydroxyethyl)piperazine, 1-(2-aminoethyl)piperazine, 1-(3-aminopropyl)-imidazole, 1,8-diazabicyclo[5.4.0]undec-7-ene, N,N,N'-trimethylaminoethanolamine, pentamethyldiethylenetriamine, ethylmorpholine, hydroxyethylmorpholine, aminopropylmorpholine, triethanolamine, and methyldiethanolamine. In a preferred embodiment, the buffering system of the present invention, comprises lactic acid and ammonium lactate.(see col. 4, lines 41-60)

Concerning the chemical mechanical polish, polish and the polish, Seijo teaches the following:

The process of wafer fabrication includes a series of putting down layers. Each layer involves a series of steps, which may comprise all or some of photolithography, etch, strip, diffusion, ion implant, deposition, and chemical mechanical polishing.(see col. 1, lines 15-21)

Concerning the removing polishing agent, Seijo teaches the following:

The cleaning formulation of the instant invention may have multiple cleaning uses and is not limited to post etch and resist residue removal. For example, the cleaning formulation of the instant invention when diluted with water in a ratio of from about 1 part formulation to 12 parts water, is useful for post chemical mechanical polishing cleaning.(see cols. 7-8)

Concerning the optional ester solvents, Seijo teaches the following:

In a further embodiment, the present invention relates to a semi-aqueous cleaning formulation useful for removing particles from a semiconductor substrate, wherein said formulation comprises a buffer system, and

optionally, a fluoride source and an organic solvent system. Preferably, the organic solvent system is soluble in water. Preferably the organic solvent system comprises at least one polar solvent component. The cleaning formulation may comprise from about 0-95% weight by volume of the solvent system, more preferably between 0 and 80% weight by volume and most preferably between 0 and 70% weight by volume of the organic solvent system. Preferably, at least one component of the organic solvent system comprises an amide or ether functional group. Preferred solvents include but are not limited formamides amide glycol ethers, to N,N-dimethylacetamide, N,N-dimethylformamide, 1-cyclohexyl-2-pyrrolidinone, N-methylpyrrolidone, N-cyclohexylpyrrolidone, N-hydroxyethylpyrrolidone, N-octylpyrrolidone, 1,3-dimethylpiperidone, ethylene glycol, propylene glycol, phenoxyethanol, sulfolane, gamabutyrolactone, butyrolactone, 1,4-butanediol, N,N-dimethylacetoacetamide, N-cyclohexylpyrrolidone, N-octylpyrrolidone, 1-phenoxy-2-propanol, phenoxyethanol, dimethylsulfoxide, diethyleneglycol monobutylether, diethylenegylcol monomethylether, diethylene glycol monoethylether, diethylene glycol monopropyl ether, 1,3-dimethyl-2-imidazolidinone and mixtures thereof.(see col. 5, lines 19-45)

Concerning the saccharides, sugar alcohols and the glucose, Seijo teaches the following:

The corrosion inhibitor serves to react with the substrate surface, which may be metal or non-metal, to passivate the surface and prevent excessive

etching during cleaning. The cleaning agent is a substance that chelates to specific metal or non-metal components to be removed, leading to soluble components that can be readily removed during polishing. The corrosion inhibitor and cleaning agent for the instant invention are preferably a carboxylic acid. More specifically, the carboxylic acid may be chosen from, but not limited to glycine, oxalic acid, malonic acid, succinic acid, citric acid, tartaric acid, gluconic acid, nitrilotriacetic acid, their salts and mixtures thereof. Alternatively, the carboxylic acid may be a di, tri or tetra carboxylic acid that preferentially has a nitrogen containing functional group. In the most preferred form, the corrosion inhibitor and the cleaning agent are iminodiacetic acid. Other substances useful as corrosion inhibitors and/or cleaning agents include but are not limited to ethylene-diaminetetraacetic acid (EDTA), benzotriazole (BTA), tolytriazole, BTA derivatives, such as BTA carboxylic acids, boric acid, fluoroboric acid, cystine, haloacetic acids, glucose, dodecyl mercaptan and mixtures thereof.(see cols. 5-6; noting glucose is a saccharide).

Claims 6-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Sakai, Akimitsu (US20030158059).

Concerning the basic compound, Sakai, Akimitsu teaches the following:

[0021] The organic base compound includes organic amines, alkanolamines;

tetraalkylammonium hydroxides, and the like.

Concerning the sugar alcohol, mannitol, saccharides, sugar alcohols and the glucose, Sakai, Akimitsu teaches the following:

[0014] The reducing agent includes compounds having lower oxidation states, such as sulfites, thiosulfates, aldehydes, saccharides, sugar alcohols, formic acid and oxalic acid. Concrete examples thereof includes sulfites such as sodium sulfite and ammonium sulfite; thiosulfates such as sodium thiosulfate and ammonium thiosulfate; aldehydes such as formaldehyde and acetaldehyde; saccharides such as pentoses such as arabinose, xylose, ribose, xylulose and ribulose, hexoses such as glucose, mannose, galactose, fructose, sorbose and tagatose, heptoses such as sedoheptulose, disaccharides such as trehalose, saccharose, maltose, cellobiose, gentiobiose and lactose, trisaccharides such as raffinose and maltotriose, and polysaccharides composed of each monosaccharide; sugar alcohols such as pentitols such as arabitol, adonitol and xylitol, and hexitols such as sorbitol, mannitol and dulcitol; formic acid, oxalic acid, succinic acid, lactic acid, malic acid, butyric acid, pyruvic acid, citric acid, 1,4-naphthoquinone-2-sulfonic acid, ascorbic acid, isoascorbic acid, and the like, and derivatives thereof and the like.

Concerning the chemical mechanical polish and the semiconductor, Sakai, Akimitsu teaches the following:

[0001] The present invention relates to a detergent composition used for cleaning a semiconductor substrate or a semiconductor device after a step of forming a semiconductor device on a semiconductor substrate such as a silicon wafer, especially after a CMP (chemical mechanical polishing) step, and a cleaning process for a semiconductor substrate or a semiconductor device using the detergent composition.

Concerning the tetramethylammonium hydroxide and the optional alcohol solvent, Sakai, Akimitsu teaches the following:

[0022] Concrete examples of the organic base compound include dimethylamine, trimethylamine, diethylamine, triethylamine, dibutylamine, octylamine, 2-ethylhexylamine, monoethanolamine, diethanolamine, triethanolamine, methylethanolamine, methyldiethanolamine, dimethylethanolamine, monopropanolamine, dipropanolamine, tripropanolamine, methylpropanolamine, methyldipropanolamine, aminoethylethanolamine, tetramethylammonium hydroxide, and the like.

Concerning the optional ketone solvent, Sakai, Akimitsu teaches the following:

[0040] The organic solvent includes hydrocarbons such as amylbenzene and octane; halogenated hydrocarbons such as allyl chloride and 2-ethylhexyl chloride; alcohols such as amyl alcohol and allyl alcohol; ketones such as methyl ethyl ketone and acetylacetone; esters such as diethyl adipate and ethyl acetoacetate; polyhydric alcohols such as ethylene glycol and propylene glycol; polyhydric alcohol alkyl ethers such as butyl diglycol

and ethylene glycol monobutyl ether; carboxylic acids such as isovaleric acid and 2-ethylhexanoic acid and acid anhydrides thereof; phenols such as ethylphenol and octylphenol; nitrogen-containing compounds such as acetamide and aniline; sulfur-containing compounds such as diethylsulfate and thiophene; and fluorine-containing compounds such as dichlorodifluoromethane and trifluoroacetic acid. Among them, the polyhydric alcohols are preferable in consideration of market availability, hazardous nature and the like.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregory E. Webb whose telephone number is 571-272-1325. The examiner can normally be reached on 9:00-17:30 (m-f).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yogendra Gupta can be reached on 571-272-1316. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Gregory E. Webb
Primary Examiner
Art Unit 1751

gew